

## ABSTRACT

A system and method for determining the volume of oxygen taken up by the lungs of a human or veterinary patient. A closed ventilation circuit is connected to a spirometric device, which contains a quantity of oxygen. As oxygen is taken up by the patient, an equivalent volume of oxygen passes from the spirometric device into the ventilation circuit. The volume of oxygen that moves from the spirometric device may thus be measured as an indication of the volume of oxygen that has been taken up by the patient. In some embodiments, a source of make-up oxygen is connected to the ventilation circuit and the flow of make-up oxygen is adjusted as necessary to maintain a substantially constant volume of oxygen in the spirometric device. The volume of make-up oxygen is measured and serves as an indication of the amount of oxygen taken up by the patient. A valve may be used to close the spirometric device off from the ventilation circuit during all but a part of the ventilation cycle (e.g., all but the late expiratory phase) to prevent substantial pressure or movement excursions within the spirometric device